

In the Claims:

The claims are as follows:

1. (Previously presented) A method for filling empty cells of a range of cells in a multi-dimensional spreadsheet comprising a plurality of cells identified by a cell address along each dimension of the spreadsheet, said method comprising the steps of:

selecting the range of cells, said range comprising a plurality of sample cells and one or a plurality of empty cells, wherein prior to said selecting each sample cell contains a sample value and an empty cell contains no value or a value not considered as a sample value; the content y_i of each sample cell and each empty cell being associated with a particular value x_i of a variable x ;

after said selecting, ordering the sample cells and the empty cells according to the values x_i associated with the content of said cells;

after said ordering, processing the empty cells comprising, for each empty cell, the steps of:

identifying the value x_i associated with the content of the empty cell;

selecting one or a plurality of previous sample cells with respect to the empty cell;

selecting one or a plurality of next sample cells with respect to the empty cell;

computing the value y_i of the empty cell according to the values y_{previous} contained in the selected one or plurality of previous sample cells, and the values y_{next} contained in the selected one or plurality of next sample cells;

filling the empty cell with said computed value y_i ; and

after said processing the empty cells, displaying the spreadsheet via a graphical user interface (GUI).

2. (Previously presented) The method of claim 1, wherein said step of computing the value y_i of each empty cell according to the values y_{previous} contained in the selected one or plurality of previous sample cells, and the values y_{next} contained in the selected one or plurality of next sample cells, comprises the further step of:

computing the value y_i of the empty cell according to the values x_{previous} associated with the content y_{previous} of the selected one or plurality of previous sample cells, and the values x_{next} associated with the content y_{next} of the selected one or plurality of next sample cells.

3-6. (Canceled)

7. (Previously presented) The method of claim 1, wherein the selected range of cells further comprises variable cells, a variable cell containing a value x_i associated with the content y_i of a particular sample cell or a particular empty cell.

8. (Previously presented) The method of claim 1, wherein the step of computing the value y_i of an empty cell comprises the step of computing the value y_i as equal to:

$$y_i = y_{\text{previous}} + (x_i - x_{\text{previous}}) * ((y_{\text{next}} - y_{\text{previous}}) / (x_{\text{next}} - x_{\text{previous}}))$$

where :

y_{previous} is the content of a previous cell containing a sample;

x_{previous} is the value of the variable x associated with the content of the previous cell containing a sample;

y_{next} is the content of a following cell containing a sample;

x_{next} is the value of the variable x associated with the content of a following cell containing a sample;

x_i is the value of the variable x associated with the empty cell.

9. (Previously presented) The method of claim 1, wherein said selected range of cells comprises a double column or double row range of cells, said range of cells comprising $2N$ cells, wherein the i -th cell in a first column or first row comprises a value x_i and the second column or second row comprises a value $y_i = f(x_i)$.

10. (Previously presented) The method of claim 1, wherein the step of filling cells comprises the further step of: defining a table and associating said table with the selected range of cells, said table comprising for each empty cell i :

an “index field” for identifying said empty cell;

a “sample field” for indicating that said cell is an empty cell;

a “ X_i field” with the value x_i associated with said empty cell;

an “index of previous sample field” with the value of the “index field” of a previous record having a sample value;

a “ X_{prev} sample field” with the value of the “ X_i field” of a previous record having a sample value;

a “f(Xprev. sample) field” with a value $y = f(x)$ of a cell in the range corresponding to a previous record having a sample value;

an “index of next sample field” with a value of the “index field” of a next record having a sample value;

a “Xnext sample field” with a value of the “X_i field” of a next record having a sample value;

a “f(Xnext sample) field” with a value $y = f(x)$ of a cell in the range corresponding to a next record having a sample value.

11. (Previously presented) The method of claim 10, wherein said table further comprises for each sample cell i:

an “index field” for identifying said sample cell;

a “sample field” for indicating that said cell is a sample cell;

a “X_i field” with the value x_i associated with said sample cell;

the “index of previous sample field” with the value of the “index field” of said sample cell;

a “Xprev. sample field” with the value of the “X_i field” of said sample cell;

the “f(Xprev. sample) field” with the value $y = f(x)$ of said sample cell;

the “index of next sample field” with the value of the “index field” of said sample cell;

the “Xnext sample field” with the value of the “X_i field” of said sample cell;

the “f(Xnext sample) field” with the value $y = f(x)$ of said sample cell.

12. (Previously presented) The method of claim 11, wherein said table comprises N records, where N equals the number of rows in a single or double column range of cells or the number of columns in a single or double row range of cells.

13. (Previously presented) A computer system comprising a processor and a memory coupled to the processor, said memory containing instructions that when executed by the processor implement the method of claim 1.

14. (Previously presented) A computer program comprising instructions adapted for carrying out the method of claim 1 when said computer program is executed on a computer, said computer program comprising said instructions being stored on a memory device of a computer system.

15. (Previously presented) The method of claim 1, further comprising: responsive to an occurrence of at least one event, automatically again performing said processing the empty cells, wherein the at least one event is selected from the group consisting of

- a change of one or a plurality of sample cells in the range,
- a change of one or a plurality of empty cells in the range,
- an addition of one or a plurality of sample cells in the range,
- an addition of one or a plurality of empty cells in the range,
- a deletion of one or a plurality of sample cells in the range,
- a deletion of one or a plurality of empty cells in the range, and
- combinations thereof.

16. (Previously presented) The method of claim 15, wherein the at least one event comprises said change of one or a plurality of sample cells in the range.

17. (Previously presented) The method of claim 15, wherein the at least one event comprises said change of one or a plurality of empty cells in the range.

18. (Previously presented) The method of claim 15, wherein the at least one event comprises said addition of one or a plurality of sample cells in the range.

19. (Previously presented) The method of claim 15, wherein the at least one event comprises said addition of one or a plurality of empty cells in the range.

20. (Previously presented) The method of claim 15, wherein the at least one event comprises said deletion of one or a plurality of sample cells in the range.

21. (Previously presented) The method of claim 15, wherein the at least one event comprises said deletion of one or a plurality of empty cells in the range.

22. (Previously presented) The method of claim 1, further comprising designating the selected range of cells as a persistent sampled range of cells (PSROC).

23. (Previously presented) The method of claim 22, wherein a background color of the selected

range of cells is a first color before said designating the selected range of cells as a PSROC, and wherein after said designating the selected range of cells as a PSROC the method further comprises changing the background color of the selected range of cells to a second color that differs from the first color.

24. (Previously presented) The method of claim 1, wherein for at least one empty cell of said empty cells:

said one or a plurality of previous sample cells consists of said plurality of previous sample cells,

said one or a plurality of next sample cells consists of said plurality of next sample cells,
or

said one or a plurality of previous sample cells consists of said plurality of previous sample cells and said one or a plurality of next sample cells consists of said plurality of next sample cells.